

ECA Update: October 22, 2013



In this update:

DOE Assesses Cost of New Radioactive Waste Landfill

Global Security Newswire

Vitter blocks Obama DOE nominee

Laura Barron-Lopez, The Hill

Now the hard part: Undoing the mess wrought by a 16-day shutdown

Sean Reilly, Federal Times

Two Parties Start Work to Avoid Repeat Crisis

Jonathan Weisman and Jackie Calmes, The New York Times

Senate Confirms OMB Management Deputy

Charles S. Clark, Government Executive

Westinghouse clashes with Georgia Power over nuclear plant cost overruns

Anya Litvak, Pittsburg Post-Gazette

For Tepco and Japan's Fukushima Daiichi nuclear plant, toxic water stymies cleanup

Chico Harlan, The Washington Post

More Information

[About ECA](#)

[Membership](#)

[Contact Us](#)

[Helpful Links](#)

To help ensure that you receive all email with images correctly displayed, please add ecabulletin@aweber.com to your address book or contact list

[Subscribe](#)

to the ECA Email Server

[Online Version](#)

If you have trouble viewing this email, view the online version

DOE Assesses Cost of New Radioactive Waste Landfill

Global Security Newswire

October 21, 2013

[LINK](#)

The U.S. Energy Department estimates its proposed hazardous-and-radioactive waste landfill in Tennessee would cost roughly one-third the amount of shipping the materials to other locations, according to the Knoxville News Sentinel.

The federal agency said its current landfill for hazardous and radioactive refuse in Oak Ridge, Tenn. -- the Environmental Management Waste Management Facility -- could reach its capacity as early as 2020. Energy Department officials have suggested building a new dump for such environmental-cleanup waste on 92 acres of land near the existing facility, and opening the replacement site before the initial one is capped.

"To ensure that we have adequate landfill capacity to dispose of the remaining waste generated from environmental cleanup here, we have proposed construction of a new disposal facility adjacent to EMWMF [the existing landfill] and just west of Y-12," Mike Koentop, executive officer of the Energy Department's Oak Ridge cleanup program, said in response to questions from the News Sentinel.

The new landfill -- the proposed Environmental Management Disposal Facility -- would cost \$817 million. Shipping the waste offsite, mainly to Nevada, would cost roughly three times as much, according to the news

report.

Before the Energy Department can proceed with planning the new facility, though, it must conduct an examination of alternatives. One different option could be to store the waste right at the site of environmental-cleanup projects.

The current Oak Ridge landfill, in Bear Creek Valley near the Y-12 nuclear-weapons plant, receives 90 percent of the Energy Department's cleanup-generated waste. The volume of construction debris destined for it has increased following the demolition of the K-25 uranium-enrichment facility in Oak Ridge and other older structures.

The Energy Department, meanwhile, has held sensitive talks with officials in Nevada about transporting nuclear waste to their state from Tennessee.

Vitter blocks Obama DOE nominee

Laura Barron-Lopez, The Hill

October 21, 2013

[LINK](#)

Sen. David Vitter (R-La.) on Monday said he would block confirmation of President Obama's nominee for undersecretary of the Energy Department.

Vitter said he would hold up Elizabeth Robinson's nomination because of NASA's "stalling" of a project in New Orleans that he said would bring 300 to 600 jobs to his home state.

Robinson is now the chief financial officer at NASA.

"Ms. Robinson needs to answer questions about why they've delayed the project, and other questions about NASA's operations before she leaves her job overseeing their finances," Vitter said in a statement.

Vitter said there is no apparent reason for NASA's holding up of the Orion Multi-purpose Crew Vehicle and Space Launch System.

He also said Robinson would have a significant impact on Louisiana in her new role given the state's dependence on the energy sector.

"I am concerned with some of your actions, or lack of actions, in performing your current duties at NASA," he wrote.

Vitter also pushed Robinson on the use of personal email accounts for government business at NASA. It's a common point of inquiry for the lawmaker, who blasted the Environmental Protection Agency's former administrator Lisa Jackson and other employees for using personal email accounts.

"Employees at NASA have expressed concern to me that some of its senior leadership have also carried multiple communications devices and used personal emails to conduct government business," Vitter wrote.

Now the hard part: Undoing the mess wrought by a 16-day shutdown

Sean Reilly, Federal Times

October 21, 2013

[LINK](#)

After more than two weeks on furlough, Jason Grimes couldn't wait to get back to his job with the General Services Administration's Atlanta office last week. But he was also nervous about what he'd find.

"I can only imagine it's going to be an avalanche of stuff to catch up on and trying to get a sense of how bad the damage is," Grimes, a sustainability specialist, said in an interview beforehand.

So it went across government as hundreds of thousands of employees streamed back to work after the partial government shutdown abruptly ended.

"It took a little while to get back in the swing of things," Dwight Jefferson, a social science analyst with the Housing and Urban Development Department in Washington, said after his first day on the job, adding -- in a common refrain -- "I forgot my login password." But by the time Jefferson finished for the day, he said, "I felt pretty acclimated."

The back-to-work summons came on short notice; it was close to midnight Wednesday when the Obama administration told employees to plan on reporting the next day after Congress approved a stop-gap spending bill that ended the 16-day shutdown. Jefferson, who teleworked Thursday, was one of many benefiting from White House instructions for agencies to be flexible in handling employees' return to work.

In their first full week of being back on the job, returning managers now are grappling with the consequences of the shutdown: whittling down overstuffed email inboxes, getting behind-schedule projects back on track and taming accumulating backlogs.

"First and foremost, remember that people are going to be very concerned about their pay," said Thad Juszczak, who was in charge of an IRS budget office during the last major shutdowns in late 1995 and early 1996. As part of the short-term spending bill, Congress also approved back pay for all federal employees who had been furloughed.

While the White House pledged that the money would show up in the next paycheck, agencies such as the Social Security Administration were striving to get workers their overdue compensation as early as this week, according to J. David Cox, president of the American Federation of Government Employees.

"I think it takes like a week to get back to business," said Juszczak, now with consultant Grant Thornton.

Procurement staffs must restart contracts stopped during the shutdown. And because the shutdown began at the start of fiscal 2014, it caught agency financial management staff as they were closing out the books on 2013, Juszczak said.

At the Social Security Administration, the almost 1,500 administrative law judges who hear appeals of disability claim denials were deemed essential and kept on the job. But for the first week or so, more than 6,000 support staff were sent home on furloughs, said Randall Frye, a North Carolina judge who serves as president of the Association of Administrative Law Judges union.

Thus, while judges continued to hold hearings, there were no lawyers or paralegals on hand to draft rulings, and claimants had to wait weeks longer to find out how their cases were decided, Frye said. Although SSA administrators eventually brought the support employees back to work, the shutdown added to existing backlogs, Frye said.

There were also broader questions to ponder about the shutdown's impact on the federal workforce.

"I think it causes a lot of problems for us," said Jeff Neal, a former federal chief human capital officer. People thinking about retirement will think about it more, while 20-somethings may think twice about embarking on a government career, said Neal, now a senior vice president at ICF International.

For many employees, the shutdown-related furlough came hard on the heels of sequester-related furlough, not to mention a three-year freeze on federal wage scales affecting all of the career workforce. Now, they need to know they are valued, Neal said. Although pleased to see department heads such as Agriculture Secretary Tom Vilsack and Interior Secretary Sally Jewell personally welcoming back employees last week, Neal added that federal leaders have their work cut out for them in making employees feel appreciated again. .

"Then they are going to have to figure out how to get back to some normal state."

Two Parties Start Work to Avoid Repeat Crisis

Jonathan Weisman and Jackie Calmes, The New York Times

October 17, 2013

[LINK](#)

WASHINGTON -- With the government reopened and a debt default averted for now, Congressional negotiators on Thursday plunged into difficult budget talks to avoid a repeat crisis within months, and quickly agreed to lower their sights from the sort of grand bargain that has eluded the two parties for three years.

But the need for a bipartisan breakthrough, even a modest one, was amplified by the economic costs wrought by the 16-day shutdown and near-default on government obligations.

"The key now is a budget that cuts out the things that we don't need, closes corporate tax loopholes that don't help create jobs, and frees up resources for the things that do help us grow -- like education and infrastructure and research," President Obama said Thursday from the White House, setting ambitious goals for Congress even as his own role in the bargaining was unclear.

The question of what a new House-Senate budget conference can deliver by its Dec. 13 deadline -- in time for Congress to act by Jan. 15 on funding to keep the government open -- remained the subject of deep skepticism, well earned by past failures at reaching so-called grand bargains for deficit reduction and spending investments in the past three years.

With the scope of the talks narrowed for now, on the table are ideas left over from past, failed bargaining: possible reductions in other programs -- like farm subsidies, federal pensions, the Postal Service and unemployment insurance -- and relatively minimal tax loophole closings, possibly as little as \$55 billion.

While there is nonetheless hope on both sides for a defining budget deal, the three-week budget crisis scrambled Washington's power structure. Democrats, united throughout, believe they enter this next round far stronger, backed by a president who proved his own resolve. Republicans, having played their trump card by shutting down the government, are weakened and more divided than ever.

Reflecting his party's chastened state heading into the next phase, Senator Mitch McConnell of Kentucky, the Republican leader, told the conservative National Review on Thursday, "A government shutdown is off the table."

Even so, Republicans enter these new talks with one advantage: if the negotiations fail, the next round of across-the-board spending cuts known as sequestration will hit automatically, even deeper than the first. Democrats want to avoid that far more than Republicans do.

Both Mr. Ryan and Ms. Murray struck positive notes.

"Our goal is to do good for the American people, to get our debt under control, to do smart deficit reduction, and to do things we think can grow the economy and get people back to work," Mr. Ryan said. Ms. Murray said, "We believe there is common ground."

By definition, common ground suggests no grand bargain, which would require a much more difficult trade-off where they fundamentally differ -- higher tax revenues that Republicans oppose, in exchange for reductions in Medicare, Medicaid and Social Security that Democrats vow they will not entertain without curbs on tax breaks for wealthy individuals and corporations.

With the last-minute settlement, Washington found itself battered, exhausted and about where it was back in March in terms of budget

progress. That month, Congressional Republicans and the White House failed to prevent the sequestration cuts from taking effect across military and domestic programs.

The Republican-led House and Democratic-controlled Senate passed vastly different budgets, but Republicans blocked Democrats' repeated efforts to convene a conference committee to reconcile the differences -- until this week.

Congress not only reopened the government through Jan. 15 and raised the nation's borrowing limit effective to Feb. 7 on Wednesday. It also mandated the formal budget negotiations in a separate parliamentary motion.

"Nobody can guarantee success, but what we can say is that if we don't make the effort and get together and talk, that would guarantee failure," said Representative Chris Van Hollen of Maryland, House Democrats' chief negotiator.

To improve the prospects for some success, the negotiators largely agreed at a closed-door breakfast on Thursday that a deal involving significant new tax revenues and large-scale changes to Medicare, Medicaid and Social Security, whose growth in an aging population is driving long-term projections of growing debt, is not going to happen.

Instead, they agreed, the talks will aim at a more modest, confidence-building measure to replace the sequestration cuts in 2014. Negotiators could aim higher, for a deal saving at least \$1 trillion over the next nine years to substitute completely for the arbitrary sequestration cuts. But neither side was hopeful of that.

Even with lower sights, negotiators face the same hurdle over taxes that has ended a series of bipartisan talks in 2011 -- between Mr. Obama and Speaker John A. Boehner; between Vice President Joseph R. Biden Jr. and Representative Eric Cantor, the House majority leader; and between lawmakers on a so-called supercommittee.

"The old bugaboo that has made other conferences fail is revenues," said Senator Charles E. Schumer of New York, the No. 3 Democrat.

Tea Party-infused lawmakers seemed unbowed and still uncompromising despite their loss over the debt limit and government funding for the fiscal year that began Oct. 1. So did the conservative groups like Club for Growth and Heritage Action that goaded them on.

Like the Congressional actors, the White House is not expecting a grand bargain, as much as Mr. Obama -- and Mr. Boehner, for that matter -- would like to have that as a legacy. But it is determined to see an end to sequestration, and is counting on the cooperation of Republican leaders since the military is in line for greater automatic reductions than domestic programs in January.

Rank-and-file Republican lawmakers and the party base, however, have come to see sequestration as a victory.

By his televised remarks at the White House, Mr. Obama sought to project a tone of compromise, aides said, though some Republicans heard some partisan gloating. He also described a budget goal more expansive than the Congressional negotiators are setting, but one that neither party's leaders rule out.

"This shouldn't be as difficult as it's been in past years because we already spend less than we did a few years ago," Mr. Obama said. "Our deficits are half of what they were a few years ago. The debt problems we have now are long term, and we can address them without shortchanging our kids, or shortchanging our grandkids, or weakening the security that current generations have earned from their hard work."

Senate Confirms OMB Management Deputy

Charles S. Clark, Government Executive

October 21, 2013

[LINK](#)

The Senate last Wednesday on the final day of the government shutdown approved President Obama's nominee to be deputy director for management at the Office of Management and Budget.

Beth Cobert, a senior partner at McKinsey & Co. based in San Francisco, was approved by voice vote after she drew bipartisan praise at her Oct. 2 confirmation hearing before the Senate Homeland Security and Governmental Affairs Committee. She promised to bring private-sector techniques for using data metrics and performance management to reduce government waste. "It is important to tap into the expertise of stakeholders, to listen to agencies and get people to own the solutions," she said.

Cobert replaces Jeffrey Zients, who resigned in May but who has since returned to the Obama administration as director of the White House National Economic Council.

Westinghouse clashes with Georgia Power over nuclear plant cost overruns

Anya Litvak, Pittsburg Post-Gazette

October 20, 2013

[LINK](#)

The judge called it a "highly choreographed 'race-to-the-courthouse' " of immense consequence. At stake is \$900 million, and the question of who is to blame for delays and cost overruns at the first nuclear construction project in the U.S. in 30 years.

Cranberry-based Westinghouse Electric Co., developer of the AP1000 power plant, and Georgia Power, the utility that commissioned two of units for its Vogtle Power Station in Waynesboro, Ga., have been at odds over construction costs for two years.

The project, originally estimated to cost \$14 billion, is now between 18 and 21 months behind schedule and \$900 million overbudget.

Westinghouse and its construction partner, Stone & Webster, have had to make a number of changes to the original design plan that was the basis for the 2008 contract with Georgia Power and several other part-owners. According to Westinghouse, those changes and their costs were the result of new regulations by the Nuclear Regulatory Commission, including a requirement finalized in 2010 that buildings that house nuclear reactors must be able to withstand an airplane crash.

Georgia Power, which is owned by Atlanta-based Southern Co., says deficiencies in Westinghouse's designs and the contractors' execution of the work racked up the overruns. Therefore, Westinghouse should pay the costs.

At first, the companies in the Vogtle consortium held internal negotiations. Then came the mediation stipulated in their contract. When that ended, at the pre-arranged hour of 8 p.m. Nov. 1, 2012, "The events that ensued are the kind scarcely encountered outside the pages of a law school exam," wrote Colleen Kollar-Kotelly, a U.S. district court judge in the District of Columbia.

At exactly 8:00:01 p.m. that day, Westinghouse clicked submit, electronically launching a lawsuit against Georgia Power in a federal court in Washington, D.C. Simultaneously, an attorney for Georgia Power walked into a federal court in the Southern District of Georgia and handed the clerk a lawsuit that bears a written time stamp of 8 p.m.

The parallel lawsuits dragged on for almost a year without much progress as each side tried to establish itself as the true plaintiff. In September, Judge Kollar-Kotelly put an end to the race. The dispute will be hashed out in the Georgia court.

The risk of being first

Many things at Vogtle are being done for the first time.

It's the first time a modular nuclear plant is being built in the U.S., where parts are fabricated elsewhere and assembled on site. Regulations governing the design of the shield building, which houses the reactor, have been changed since the Sept. 11, 2001, terrorist attacks, as have other rules.

"Progress at Vogtle is continuing well," said Sheila Holt, a spokeswoman for Westinghouse. "Disputes of this type are not unusual for the magnitude of this project."

While Vogtle is the first AP1000 project in the U.S., Westinghouse is further along in installing new AP1000 plants in China, and Ms. Holt said the company is applying lessons learned there to its work in Georgia.

While \$900 million is a significant sum, it's still a small fraction of the cost overruns experienced during the construction of existing nuclear plants. Those, on average, ran 200 to 300 percent over budget. Vogtle is 16 percent over.

But the project is only half done.

In August, Southern Co. warned shareholders in its quarterly report that other issues with construction, fabrication and delays are likely, as are additional claims by Westinghouse and Stone & Webster, a division of Amsterdam-based CB&I. More litigation is possible, the company cautioned, which "could result in increased costs either to the owners, the contractor, or both."

That same month, the independent monitor who oversees the construction project for the Georgia Public Service Commission expressed hope that new management at Westinghouse would strike a more cooperative tone. Danny Roderick was named CEO at Westinghouse in September 2012 and in May 2013, Mark Marano was brought in as the new president of the Americas region.

"The [monitor] has observed an attitude of increased cooperation and focus on the critical path schedule activities," Williams Jacobs, the independent market monitor, and Steven Roetger, an analyst for the commission testified in August. "Whether the new management team can successfully maintain the current schedule given the challenges that lie ahead remains to be seen."

Mr. Jacobs and Mr. Roetger also told the commission that it's not clear if the revised schedule, which pushes the opening of the units to the end of 2017 and the end of 2018, is "reasonable and achievable" and that additional capital costs may result from schedule delays, additional financing and litigation-related expenses.

Learning from each other

It would seem that the more nuclear plants that are built, the more is learned about nuclear construction management and the lower the cost overruns and delays. But the history of the nuclear industry in the U.S. defies that logic, said Sola Talabi, a risk manager with Westinghouse.

To be fair, a new nuclear project may be the hardest large-scale construction venture to keep on schedule and on budget, because of the cost, the regulations, and the infrequency of such events. That's why researchers at Carnegie Mellon University and Mr. Talabi, who recently completed his Ph.D. at CMU, are hoping to launch a center to develop guidelines for managing such projects. The theory is, if you can make it with nuclear, you can make it anywhere.

Westinghouse is not behind the effort to establish the Infrastructure Development Efficiency and Learning center (Ideal), although Ms. Holt said the company would welcome such research.

The culprit behind budget overruns is often bad estimation, Mr. Talabi said.

"If you don't estimate your projects -- or at least the risks -- properly, you manage them as a series of emergencies, which is the most expensive way to manage anything," he said.

He wants to model the Ideal center after the Institute for Nuclear Power Operations in Atlanta, which was established after the accident at Three Mile Island to foster information sharing between nuclear operators. Ideal is envisioned as the construction and deployment side of the same coin.

"Another blowup where we misjudge the cost of a power plant by 50 or 60 percent will kill the industry," said Paul Fischbeck, a professor of social and decision sciences at CMU and Mr. Talabi's adviser who is working with him to launch Ideal.

Mr. Talabi cited two reasons why something like Ideal hasn't been done before: competition and litigation.

"Half the players in the industry are usually suing each other one way or another," he said.

"Within the consortium, sometimes we don't share," he said about the nuclear industry in general. "Think about that. I'm the engineer, you're the architect and [he's] the builder. And I'm holding my cards close to my chest because I know at the end of the day, I know we're going to end up suing each other."

For Tepco and Japan's Fukushima Daiichi nuclear plant, toxic water stymies cleanup

Chico Harlan, The Washington Post
October 21, 2013

[LINK](#)

TOKYO -- Two and a half years after a series of nuclear meltdowns, Japan's effort to clean up what remains of the Fukushima Daiichi power plant is turning into another kind of disaster.

The site now stores 90 million gallons of radioactive water, more than enough to fill Yankee Stadium to the brim. An additional 400 tons of toxic water is flowing daily into the Pacific Ocean, and almost every week, the plant operator acknowledges a new leak.

That operator, Tokyo Electric Power Co., known as Tepco, was put in charge of the cleanup process more than two years ago and subsequently given a government bailout as its debts soared. The job of dismantling the facility was supposed to give Tepco an opportunity to rebuild credibility.

But many lawmakers and nuclear industry specialists say that Tepco is perpetuating the kinds of mistakes that led to the March 2011 meltdowns: underestimating the plant's vulnerabilities, ignoring warnings from outsiders and neglecting to draw up plans for things that might go wrong. Those failures, they say, have led to the massive buildup and leakage of toxic water.

"Tepco didn't play enough of these what-if games," said Dale Klein, a former chairman of the U.S. Nuclear Regulatory Commission, who recently joined a Tepco advisory panel. "They didn't have enough of that

questioning attitude" about their plans.

The leaks into the ocean are far less toxic than the radioactive plumes that emanated from the plant after the 2011 earthquake and tsunami, forcing 160,000 people to move out of the vicinity. Thanks to that quick evacuation, experts say, there are no expectations of a Chernobyl-style spike in cancer cases -- although the government is conducting thyroid checks of thousands of children. But the flow of contaminated water amounts to a slow-burning environmental disaster with implications for Japan's wildlife and its food chain.

The problems have prompted the central government to step in with about \$500 million to fund new countermeasures, including a subterranean "ice wall" designed to keep groundwater from flowing into irradiated buildings.

The latest government-led actions are particularly galling for some who say Tepco should have taken similar measures earlier. One lawmaker, Sumio Mabuchi, who was also an adviser to then-Prime Minister Naoto Kan, says Tepco, deep in debt, neglected to take important steps against the groundwater two years ago because of concerns about its bottom line. Tepco's president, Naomi Hirose, testified in parliament last month that the company hasn't "scrimped" on the cleanup, though he did say that Tepco is "majorly at fault" for its failure to manage the groundwater buildup.

The 40-year decommissioning is expected to cost 10 trillion yen, or about \$100 billion -- roughly two years' worth of Tepco's revenue -- and the company says it is trying to save up and cut other costs. But for many Japanese, the company's assurances inspire little confidence. Two members of Japan's national legislature, speaking on the condition of anonymity to share what they describe as sensitive details, say Tepco continues to spend irresponsibly on lobbying politicians, offering them free trips to nuclear sites that include meals and lodging in hot springs resorts. A Tepco spokesman said the company does not offer such trips.

The coastal Daiichi plant is on an old riverbed, its back yard a line of forested hills and mountains. Even before the 2011 disaster, rainfall from across the region would funnel toward the plant. Such inflow was rarely a problem, because a piping system collected groundwater and spit it into the ocean. Minor leaks would sometimes form in buildings built below sea level, but even that water, uncontaminated, was easy to pump out and dump.

The 9.0-magnitude earthquake and 46-foot tsunami wave of March 11, 2011, threw the plant's groundwater system out of whack. Damaged pipes no longer corralled the inflow, meaning that the plant lost its first line of defense against water streaming in from the hillsides. Worse, the plant had become a disaster site, and any water that flowed under or through the area picked up toxicity of its own. Groundwater that made its way into the reactor buildings also mixed with a separate channel of intensely contaminated water that had been used to douse and cool the reactors.

No longer could the groundwater simply be discarded into the ocean.

The first months of the disaster were chaotic, an improvised battle that involved firetrucks, helicopters, robots and workers trying to cool melted nuclear fuel. As the emergency calmed and the groundwater problem emerged, Tepco was left with two options: It could either block the groundwater from entering the site, or it could pump the groundwater out and store whatever had leaked into buildings.

Tepco opted for the latter -- a mistake, many outside researchers say. Atsunao Marui, a groundwater expert and member of a government-led panel that advises Tepco, said the company was slow to assess just how rapidly groundwater from mountains was flooding the buildings. At the time of the disaster, Tepco didn't have a single groundwater specialist among its 40,000 employees, Marui said.

Tepco also declined a June 2011 request from Mabuchi, the lawmaker and adviser to the prime minister, to build a special wall extending 100 feet underground around the reactor and turbine buildings, sealing them off from the groundwater flow. Tepco initially agreed to the project, Mabuchi said, but backed out because of concerns about the estimated cost of 100 billion yen, or \$1 billion.

"We are already in a very severe financial situation," Tepco wrote to Japan's Ministry of Economy, Trade and Industry in a letter shared with The Washington Post. "And by taking on an additional 100 billion yen, the market could evaluate that we are one step closer to insolvency. That is something we'd like to avoid."

In the following months, Tepco never considered alternative options to cut off the groundwater, according to minutes from more than 10 hours of meetings, during which the company and a cabinet-formed team of advisers planned a "road map" for decommissioning the facility.

Tepco's plan, discussed in one of the meetings, was to pump toxic water from the reactor and turbine rooms and then cleanse it of radionuclides -- isotopes that radioactively decay -- using systems that worked like high-end Brita filters. The company would then have "clean water" that could be stored in tanks.

But Tepco's attempts to create clean water have been repeatedly derailed. Two systems have proved successful in filtering cesium. But others have been plagued by mechanical troubles -- not surprising, experts say, because they have been constructed at a breakneck pace, often with parts shrunk and custom-built to accommodate Fukushima Daiichi's cramped spaces.

Because of those malfunctions, some water stored in hastily built tanks is laced with contaminants, including strontium, which can burrow into bones and irradiate tissue. More than 1,000 gray tanks, some the size of small apartment buildings, now form a patchwork on a cliff above the plant -- an area where workers once spent their breaks taking nature walks. Enough toxic water accumulates each week to fill an Olympic-size swimming pool. One such tank has leaked, another overflowed, and

regulators fear that more spills are inevitable. Tepco must constantly build more tanks to keep pace with the accumulating water.

"It's not sustainable," said Lake Barrett, a new adviser to Tepco who directed cleanup operations at Three Mile Island after the 1979 nuclear accident there.

Tepco estimates that 800 tons of water flows under the plant daily -- half of it traveling into the ocean, the other half making its way into the facility's buildings and requiring storage. Tepco acknowledged the long-presumed ocean leaks in July; the company said it had held off on the disclosure because it didn't want to worry the public until it was certain of a problem.

Both the government and Tepco say the ocean contamination is confined mostly to a man-made harbor around the plant. But some scientists say that assurance plays down significant long-term concerns about marine life and the food chain. Cesium levels are hundreds of times the pre-accident norm in areas beyond the harbor, said Ken Buesseler, a senior scientist with the Woods Hole Oceanographic Institution who has monitored waters around the nuclear plant, most recently last month.

Radionuclides also fall to the ocean floor, where they could be ingested by bottom-feeders. Many local fish species show high enough levels of radiation that the Japanese government bars their sale.

"I could swim in that water" outside the plant, Buesseler said. "But you might not want to eat those fish. It's a serious concern for internal doses. [Radionuclides] are now on the seafloor and could stay in the food chain for years, if not decades."

Tepco's fragile situation

Some nuclear industry executives who have worked with Tepco say the company shouldn't be faulted for prioritizing issues other than the groundwater. They note that Tepco has managed to cool the molten reactors while reinforcing damaged buildings against further earthquakes.

But the buildup of contaminated water also complicates other work at the plant.

"Right now, the groundwater is the biggest problem at the plant, and one Tepco needs to solve thoroughly," said Tsuneo Futami, who was superintendent of Fukushima Daiichi from 1997 until 2000. "Dealing with this is almost a prerequisite for decommissioning."

The remaining options to deal with the buildup are unpopular or flawed. The latest plan includes the ice wall, a new groundwater pumping system and yet another system to filter radionuclides. But the ice-wall technology is unproven, and taxpayers will foot the bill because Tepco lacks the funding to deal with major, unplanned problems at the plant.

Tepco can repair its fragile economic situation with a restructuring plan

featuring major cost-cutting that was approved by the government last year. But the company says its profitability also depends on the restart of its largest nuclear power plant, Kashiwazaki Kariwa. A majority of Japanese, though, oppose nuclear power. All of the nation's 50 operable reactors are currently shuttered.

Some activists say Tepco should be allowed to go bankrupt, with the government taking full control of the Fukushima Daiichi decommissioning. But bankruptcy would cause "just one more disaster," this one economic, said Mana Nakazora, a Tokyo-based chief credit analyst at BNP Paribas. Bankruptcy might have been conceivable in the months immediately after the disaster, but Tepco has since been kept afloat with emergency loans from banks and cash injections from the government -- debts that, if not paid, would rock Japan's financial system.

Some nuclear engineers and government officials say Tepco has one other option that would ease management of the site: It can dump the stored water into the ocean, provided it can be refiltered and its now-high radiation levels lowered to within legal limits. The International Atomic Energy Agency said in April that Japan should consider such "controlled discharges." The chairman of Japan's nuclear watchdog, Shunichi Tanaka, said last month that dumping might be necessary.

Japan's National Federation of Fisheries Cooperative Associations said its members are against any releases, no matter the level of the water's toxicity, and local governments also have voiced opposition.

Their stance highlights the enormous public distrust of Tepco: Few in Japan are willing to take the company at its word if it says the controlled releases would be safe.

"They're going to have to release the water eventually," said Barrett, the adviser. "No ands, ifs or buts about it in my view. But how they get there is a huge societal problem, not just for Tepco but for Japan."